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Effect of an immune modulator on pig performance and vaccination against *Mycoplasma hyopneumoniae*

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Introduction

Previous studies have documented that immune stimulators increase antibody response when given together with a variety of antigens, as well as decreasing mortality rates under field conditions. It has been proposed that these products have effect as polyclonal immune stimulators, releasing a variety of cytokines, resulting in increased phagocytosis and increased antibody production, probably through immune activation of B cells. The aim of this study was to evaluate the effect of an immune activator composed of lipopolyscharides from *E. coli* and suspension of *Propiobacterium granulosum* cells on the efficacy of *Mycoplasma hyopneumoniae* vaccination and on productive parameters in both nursery and finishing stages.

Material and methods

A field trial was designed in order to achieve the aim of this study. At the time of the trial, the selected herd presented clinical mycoplasmosis in the growing stage. A 2 x 2 factorial model was utilized as experimental design, containing 4 treatments consisting of: T1, *M. hyopneumoniae* vaccine and immune modulator; T2, vaccine and no immune modulator; T3, immune modulator and no vaccine; and T4, no vaccine and no immune modulator. Each group had 30 animals (120 animals) and five replicates (600 animals in total). On day 0 of the study pigs of 3 weeks of age were weighed and identified. On day 21 blood samples were collected individually for *M. hyopneumoniae* antibody assessment. *M. hyopneumoniae* vaccine (Pfizer, 1 dose product) was then given to groups T1 and T2, and the immune modulator was given to groups T1 and T3. Blood samples were collected and weight recorded on day 49 of the study. Blood samples were again collected and weight recorded when the animals where 22 weeks old. On the market date the animals' weight was recorded individually and a slaughter check (lung inspection) was performed. Blood samples were tested for *M. hyopneumoniae* antibodies using the IDEXX ELISA test. Statistical analysis was performed by ANOVA (two way)

Results

No significant differences were observed in the growth performance at the end of the nursery period (10 weeks of age) or the end of the finishing period (weeks 22 and 24 of age). No seroconversion in any of the groups was observed on week 10 of age. On week 22 of age the vaccinated groups (T1 and T2) showed a higher serologic value ($p<0.05$) compared to the non vaccinated groups (T3 and T4). There was no apparent effect of the immune modulator on antibody titers, in both vaccinated and non-vaccinated pigs. Slaughter check results indicate that vaccinated groups T1 and T2 had lower average lung lesion score compared to groups T3 and T4 ($p<0.05$). The immune modulator had no effect.

Discussion

Under the conditions of this study, no positive effect was observed in growth performance during the nursery stage of the pigs (until 10 weeks old), either by the combination of both treatments (vaccine and immune modulator) or any of the single treatments. No seroconversion was observed 4 weeks after vaccination; this is expected with one-dose products which apparently only show seroconversion following field exposure. During finishing, a field *M. hyopneumoniae* challenge occurred, but there were no significant differences in growth observed in any of the groups, even though, differences in lung lesion scores were evident between vaccinated and non-vaccinated groups This may be explained by the fact that the animals suffered a very delayed mycoplasmosis, which may have resulted in large lung lesions, but little effect on growth. Alternatively, Mycoplasma may have a smaller effect on growth in very delayed infection than expected. The vaccine resulted in a reduction of lung lesions and a better serologic response at the end of the finishing period. In conclusion, no positive effect by the use of the immune modulator either as an adjuvant for vaccine efficacy or as a single treatment could be demonstrated.